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ABSTRACT

This first progress report of the Vocational-Technical Education Consortium of States (V-TECS) covers the progress of the V-TECS through its first seven months of operation and is designed to provide information to member States, prospective members, and interested agencies, organizations, and foundations. (The fundamental purpose of V-TECS is to develop catalogs of performance objectives and criterion-referenced measures in occupational education.) This document is divided into six parts: (1) V-TECS Board Members and Summaries of Meetings, (2) Development of an Operations and Management Model (methods used to develop the management model and results of the study), (3) Professional Development of Staff and Technical Coordinators (orientation to instructional system development and V-TECS, and professional development workshops), (4) Status of Catalogs Under Development and Projected Costs, (5) Contracts and Cooperative Efforts with Other Agencies and Individuals (Educational Testing Service, Nashville State Technical Institute, Individual Consultative Services, Southern Association of Colleges and Schools, Commission on Occupational Education Institutions, Occupational Career Development Branch, Occupational Measurement Squadron, and Personnel Research Division), and (6) Personnel Working on Catalogs in Member States. The appendixes include Bylaws of the V-TECS, Developmental Management Model for the V-TECS, Jury of Experts, Instructional System Design Conference Program, The Role of the Technical Coordinator in the States, and Schedule and Sequence Chart for the Memorandum of Agreement. (HD)

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SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS

COMMISSION ON OCCUPATIONAL EDUCATION INSTITUTIONS

VOCATIONAL-TECHNICAL EDUCATION CONSORTIUM OF STATES

FIRST PROGRESS REPORT
OF THE
VOCATIONAL-TECHNICAL EDUCATION CONSORTIUM OF STATES

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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MARCH, 1974

CE 009 456

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INTRODUCTION

The Vocational-Technical Education Consortium of States (V-TECS) was formed by seven states on July 1, 1973. The fundamental purpose of V-TECS is to develop catalogs of performance objectives and criterion-referenced measures in occupational education. V-TECS is developing objectives based upon a uniform procedure consisting of: (1) development of task statement booklets by a domain of job titles, (2) selection of a representative random sample of incumbent workers within the state which is developing the catalog, (3) administration of the task statement booklets to the incumbent worker sample, (4) computerized analysis of information collected from the sample in terms of time spent on tasks, difficulty of tasks, etc., (5) conversion of the task statements into performance objectives with companion criterion-referenced measures, and (6) a comprehensive field test and dissemination program.

Policy matters of V-TECS are handled by a representative Board of Directors composed of one member from each participating state who is appointed by the State's Director of Vocational Education. The Community College of the Air Force is an associate member due to their accredited status with the Commission on Occupational Education Institutions and their expertise in performance-based instruction.

A central staff is provided by the member states to coordinate, manage, and provide technical assistance to all states developing products for common use by the members.

The Vocational-Technical Education Consortium of States is an operating unit of the Commission on Occupational Education Institutions, Southern Association of Colleges and Schools (COEI/SACS). COEI/SACS is a private non-profit organization which has as its purposes: (1) accreditation of institutions eligible for membership, (2) general evaluation activities, and (3) research activities related to the first two purposes.

This report covers the progress of the Vocational-Technical Education Consortium of States through its first seven months of operation, and is designed to provide information to member states, prospective members, and interested agencies, organizations, foundations, U.S.O.E., etc.

The First Progress Report of the Vocational-Technical Education Consortium of States was reviewed and approved by the Board of Directors of V-TECS on March 7, 1974.

I. V-TECS BOARD MEMBERS AND SUMMARIES OF MEETINGS

A. Members of the Board of Directors

Chairman:
Mr. Robert Spillman, Director
Personnel Development Unit
Bureau of Vocational Education
2035 Capital Plaza Tower
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Vice Chairman:
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Occupational Research Coordinating Unit
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Parliamentarian:
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Executive Director:
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Alabama

Member	Alternate
Miss Ruth Stovall, Branch Director Program Services State Department of Education State Office Building Montgomery, Alabama 36104	Mr. James Kendrick, Curriculum Specialist State Department of Education Room 855, State Office Building Montgomery, Alabama 36104

Florida

Dr. Roy Giehls, Consultant Bureau of Vocational Research and Evaluation Room 254, Knott Building Tallahassee, Florida 32304	Dr. C. Virginia Bert Acting Administrator Bureau of Vocational Research and Evaluation Florida Department of Education Tallahassee, Florida 32304

Georgia

Member	Alternate
Mr. Paul Scott, Director Occupational Research Coordinating Unit State Department of Education Room 250, State Office Building Atlanta, Georgia 30334	Dr. Gene Bottoms, Director Division of Programs and Staff Development State Department of Education Atlanta, Georgia 30334

Kentucky

Mr. Robert Spillman, Director Personnel Development Unit Bureau of Vocational Education 2035 Capital Plaza Tower Frankfort, Kentucky 40601	Mr. Charles D. Wade, Director Program Development Division Bureau of Vocational Education Capital Plaza Tower Frankfort, Kentucky 40601

Mississippi

Dr. James E. Wall, Director Research and Curriculum Unit Mississippi State University Drawer DX State College, Mississippi 39762	(New alternate to be named)

Texas

Mr. W. H. Fitz, Educational Program Director Office of the Deputy Associate Commissioner for Occupational Education and Technology Texas Education Agency 201 East Eleventh Street Austin, Texas 78701	Mr. Joe Tokash, Consultant Office of the Deputy Associate Commissioner for Occupational Education and Technology Texas Education Agency 201 East Eleventh Street Austin, Texas 78701

Virginia

Mr. L. M. Jewell, Coordinator Vocational Education Research and Statistical Information State Department of Education Richmond, Virginia 23216	Dr. J. Dale Oliver, Director Vocational Education Evaluation Project Division of Vocational and Technical Education Virginia Polytechnic Institute and State University Blacksburg, Virginia 24061

Associate Member Non-Voting:

Member	Alternate
Capt. Robert D. Childs Professional Relations, Liaison Division Community College of the Air Force Randolph Air Force Base, Texas 78148	Lt. Col. R. N. Culbertson Chief, Liaison Division - Stop 28 Community College of the Air Force Randolph Air Force Base, Texas 78148

B. Summaries and Dates of V-TECS Board Meetings

(1) First V-TECS Board Meeting, August 2 and 3, 1973

This meeting was held in Atlanta, Georgia for the purpose of initial planning and operation of the Vocational-Technical Education Consortium of States. Seven states were represented and the associate member, the Community College of the Air Force. Special guests attending were Mr. George E. Wallace, Regional Director, Adult, Vocational, and Technical Education, DHEW, Office of Education, Atlanta, Georgia. The primary objectives of this meeting were to: (a) elect officers, (b) receive a report of the activities of the Executive Director of V-TECS, (c) consider and revise the recommended budget in terms of the seven state membership, (d) discussion of a name for the new consortium, (e) copyrighting of materials developed by V-TECS, (f) a contract for the computerized aspects of the V-TECS procedures where computerization appears to be beneficial, and (g) a large invitational conference for presenting the trends toward performance-based instruction, and the approach to be used by V-TECS in its efforts.

(2) Second Board Meeting, September 5, 6, and 7, 1973

This Board meeting was held in Biloxi, Mississippi in conjunction with preliminary planning for the Instructional Systems Design Conference to be co-sponsored by the Community College of the Air

Force, the Southern Association of Colleges and Schools, the Commission on Occupational Education Institutions, and the Vocational-Technical Education Consortium of States. The conference was hosted by the U. S. Air Force School of Applied Aerospace Sciences, Keesler Air Force Base, Biloxi, Mississippi.

Other major items of business discussed and accomplished during this meeting were: (a) development of a brochure and public information program for V-TECS, (b) discussion and adoption of a revised operating budget, (c) a contract for a National State-of-the-Art Study to be conducted by the Educational Testing Service, Princeton, New Jersey, (d) the role of the technical coordinator in each state, (e) development of a Memorandum of Agreement to control and manage product development on each project in each state, (f) discussion and development of operating Bylaws, (g) discussion of proposed management model to be developed using a selected Jury of Experts employing the Delphi technique, and (h) discussion of priorities by state for catalog development.

(3) Third Board Meeting, October 8-11, 1973

The third meeting of the V-TECS Board of Directors was held in Biloxi, Mississippi during the Instructional Systems Design Conference at times when members were available. Major agenda items were: (a) a sample design to be used by V-TECS for sampling incumbent workers in each catalog area assigned to the States, (b) activity report of the Executive Director, V-TECS, (c) review and selection of a Technical Specialist for the V-TECS staff, (d) professional and technical development program for V-TECS

staff and personnel within the member states, (e) determination of Consortium priorities and assignment of catalogs to be developed, (f) limitations of the sample design to survey incumbent workers within the state developing a catalog and the use of a purposive sample design should other states question the survey results, (g) refinement and distribution of the Memorandum of Agreement, and (h) a coding system for materials developed by the Consortium.

(4) Fourth Board Meeting, December 5, 1973

This meeting of the Board of Directors was held in Atlanta, Georgia in the conference room of the Southern Association of Colleges and Schools. Primary items of business accomplished were: (a) a strategy for the involvement of special groups during the survey of incumbent workers such as independent garage owners, professional organizations, unions, management organization, etc., (b) discussion of the Consortium copyrighting policies, (c) plans for a two-day workshop for technical coordinators concerning surveying incumbent workers and sample design, (d) report of V-TECS Staff activities, (e) discussion and setting of membership fees for new states wanting to join V-TECS, (f) discussion and distribution of the Educational Testing Services' State-of-the-Art Report (first draft), (g) discussion of additions to the background information section of the task statement booklets to be used for surveying the incumbent worker, and (h) the role and scope of the project directors in each state.

C. Board of Directors Meetings for Remainder of the Year

The Board of Directors will meet in Atlanta, Georgia for regular business sessions on March 6 and 7 and again during the first week in May. (Actual date to be set by the Chairman of the Board and the Executive Director.)

D. Bylaws of V-TECS

The Consortium has developed a set of Bylaws for its operation. Means have been included to change the Bylaws and to otherwise modify the operation, management, and conduct of business of V-TECS. Appendix "A" (blue paper) of this report contains the Bylaws presently being used by V-TECS.

II. DEVELOPMENT OF AN OPERATIONS AND MANAGEMENT MODEL

According to research, one of the primary problems confronting Educational Consortium activities (and some other cooperative efforts in Education) has been the lack of a clearly-stated and well-defined method of managing overall operations. This problem has occurred because of a general lack of focus on the real goals and objectives of the cooperative efforts and developing a means to bring focus to these goals. The Vocational-Technical Education Consortium of States (V-TECS) recognized this problem and has initiated an effort to develop, over the past fourteen months, a comprehensive management model. The narrative portion of the model and a sequence chart are included as Appendix "B" (green paper) at the end of this report.

A. Methods Used to Develop the Management Model

(1) Study of Relevant Cooperative Efforts

A comprehensive search of the literature and personal interviews with leaders in the field of performance-based instruction resulted in the identification of seven cooperative efforts using various sorts of control systems. The most desirable activities of the programs included in the study were selected, reworded, resequenced, and supplemented to form a basic model for use by V-TECS.

(2) Selection of a Jury of Experts

A national Jury of Experts were asked to serve as a panel to react to, refine, and sequence the activities to be used in the management model for V-TECS. The Jury was selected from persons who supervise, administer, research, and otherwise direct programs of curriculum development and instructional improvement. List of the Jury of Experts is included as Appendix "C" (gold paper).

(3) Instrumentation and Scales

The instruments and scales used were similar to and modeled after a study conducted by the Educational Testing Service for the National Laboratory for Higher Education entitled, "Institutional Goals Inventory."

(4) Administration of the Instruments

The instruments were administered using the Delphi technique and incorporating three probes of the Jury of Experts. The results

were computerized and consisted of a thorough analysis of responses in terms of the mode until a 75 percent concurrence was obtained. Internal consistency was calculated for each instrument by major activity. In addition, the first two probes included a sequencing question which resulted in 98.1 percent concurrence by the thirty-six member Jury of Experts.

B. Results of the Study

The final Delphi probe is being processed. The results of the study will be reported to the Board of Directors of V-TECS and used either in its recommended state or modified to suit the desires of the Board. The total study and recommendations should be completed and reported to the Board of Directors of V-TECS by May 15, 1974. The Board of Directors has adopted certain portions of the developmental model for implementation prior to its completion.

III. PROFESSIONAL DEVELOPMENT OF STAFF AND TECHNICAL COORDINATORS

A series of five workshops have been conducted and/or planned during the first year for V-TECS Staff and the Technical Coordinators in the member states. The activities have been designed to develop certain technical competencies dealing with occupational surveys, research, writing of task statements, and writing of performance objectives with companion criterion-referenced measures. Insofar as possible, the workshops have been timed to prepare consortium personnel in technical areas in keeping with the stages of development of their assigned catalogs. In each case, some overlapping of

previous workshops has occurred to refresh or emphasize prior technical training. The workshops have been conducted on the site where the desired technical competencies were being utilized so that "hands on" experience and first hand observation could be maximized. A copy of the program for the Instructional System Design Conference is included as Appendix "D" of this report.

A. Orientation to Instructional System Development and V-TECS Procedures, Keesler Air Force Base, Biloxi, Mississippi October 9-12, 1973

An Instructional Systems Design Conference was held at Keesler AFB, Mississippi, in which performance-based instruction and its inherent philosophy were key agenda topics. This conference served as an orientation phase for the Consortium staff, technical coordinators, and Board of Directors in the areas of systems design and the V-TECS occupational analysis program. Performance-based instruction was observed and discussed in seminars.

Specific Objectives of the Conference were to:

(1) Provide an orientation to V-TECS procedures for developing catalogs of performance objectives and criterion-referenced measures.

(2) Observe and participate (on a limited basis) in the development of performance-based instruction as conducted by the U. S. Air Force.

(3) Attend general session presentations by experts in the field of occupational research, occupational surveying, instructional evaluation, educational accountability, instructional systems design, and occupational analysis.

B. Professional Development Workshop, Lackland Air Force Base, San Antonio, Texas, November 12-16, 1973

The Professional Development Workshop was held at the Occupational Measurement Squadron. The main objectives of the workshop were to develop skills for the technical coordinators and consortium staff in conducting domain studies, planning and sequencing project activities, meeting reporting responsibilities, and locating and synthesizing material for developing task statements. The participants also gained the experience in actually writing task statements and occupational interviewing. An introduction to the processing and analyzing of occupational data and basic sample design was presented.

Recognized national authorities in the field of occupational measurement, occupational analysis, interviewing of job incumbents and educational research participated in this intensive eight-hour per day training activity. This workshop provided the basic skills to begin the development of catalogs of performance objectives according to V-TECS procedures.

C. Sample Design Conference, January 10-11, 1974, Atlanta, Georgia

The Sample Design Conference, conducted in Atlanta, Georgia in January, 1974, dealt specifically with the V-TECS data analysis program and the design of input data. Seminars were held on task booklet format, population framing, instrument design validity and specifications, and the follow-up of non-respondents. An orientation was given on the development of performance objectives from task statement analysis.

Sample design experts from the Educational Testing Service, Princeton, New Jersey and selected persons in the Occupational Measurement Squadron of the U. S. Air Force Air Training Command served as resource consultants for the content of this meeting. A sample design handbook developed by the V-TECS staff was distributed and explained during this activity.

D. Professional Development Workshop, Randolph Air Force Base, San Antonio, Texas, March 26-28, 1974

Plans have been completed for a Professional Development Workshop to be held in San Antonio, Texas, to develop skills in converting task statement analysis data into performance objectives and criterion-referenced measures. The implications of occupational survey data for training strategies, interviewing incumbent workers, and procedures for keypunching and forwarding input data will also be discussed. An overview of the selection and preparation of writing teams within the member states will be presented.

Expertise will be utilized from personnel of the U. S. Air Force, Air Training Command who have been working for several years in the field of occupational measurement, occupational analysis and writing performance objectives. V-TECS staff members will present information on the format for input data resulting from surveys of incumbent workers. In addition, the problems related to and procedures for the selection and preparation of writing teams will be an important topic of the workshop.

E. Professional Development Workshop, June, 1974, Atlanta, Georgia

This workshop will be designed to discuss and resolve problems encountered while utilizing and managing writing teams. Developing the format of the catalogs, including the coding of performance objectives and criterion-referenced measures, will consume a major part of the time. Opportunity will be provided all technical personnel attending to interact and to share experiences which have been beneficial during the development of performance objectives and criterion-referenced measures.

The technical coordinator in each state has been identified as the prime person for training and otherwise preparing personnel to accomplish the tasks enumerated in the Professional Development Workshops. (See Appendix "E" (yellow paper) for a description of the role of the technical coordinator.) A Technical Specialist is available, on request, from the central staff of V-TECS to assist in special problems of training, preparation, and all other technical aspects of the procedures used to develop catalogs.

IV. STATUS OF CATALOGS UNDER DEVELOPMENT AND PROJECTED COSTS

A. Projects Under Development

Listed below are the catalogs under development in the member states:

State	U.S.O.E. Code	Areas
Alabama	17.1500	Electronics Occupations
	17.01	Air Conditioning

State	U.S.O.E. Code	Areas
Mississippi	17.1007	Plumbing (Building Trades)
	1.0504	Landscaping
Georgia	14.02	Data Processing
	17.2302	Production Machine Operator
Florida	17.0301	Body & Fender
	01.0506	Turf Management
Kentucky	07.0101	Dental Assistant
	04.06	Food Distribution
	17.1001	Carpentry
	1.0301	Agriculture Power & Machinery
	14.0105	Teller
	09.0201	Child Care
Virginia	14.0700	Steno & Related and Typist & Related
	09.0202	Food Management, Production, and Services
Texas	17.3203	Water Management
	16.0605	Police Science Technology

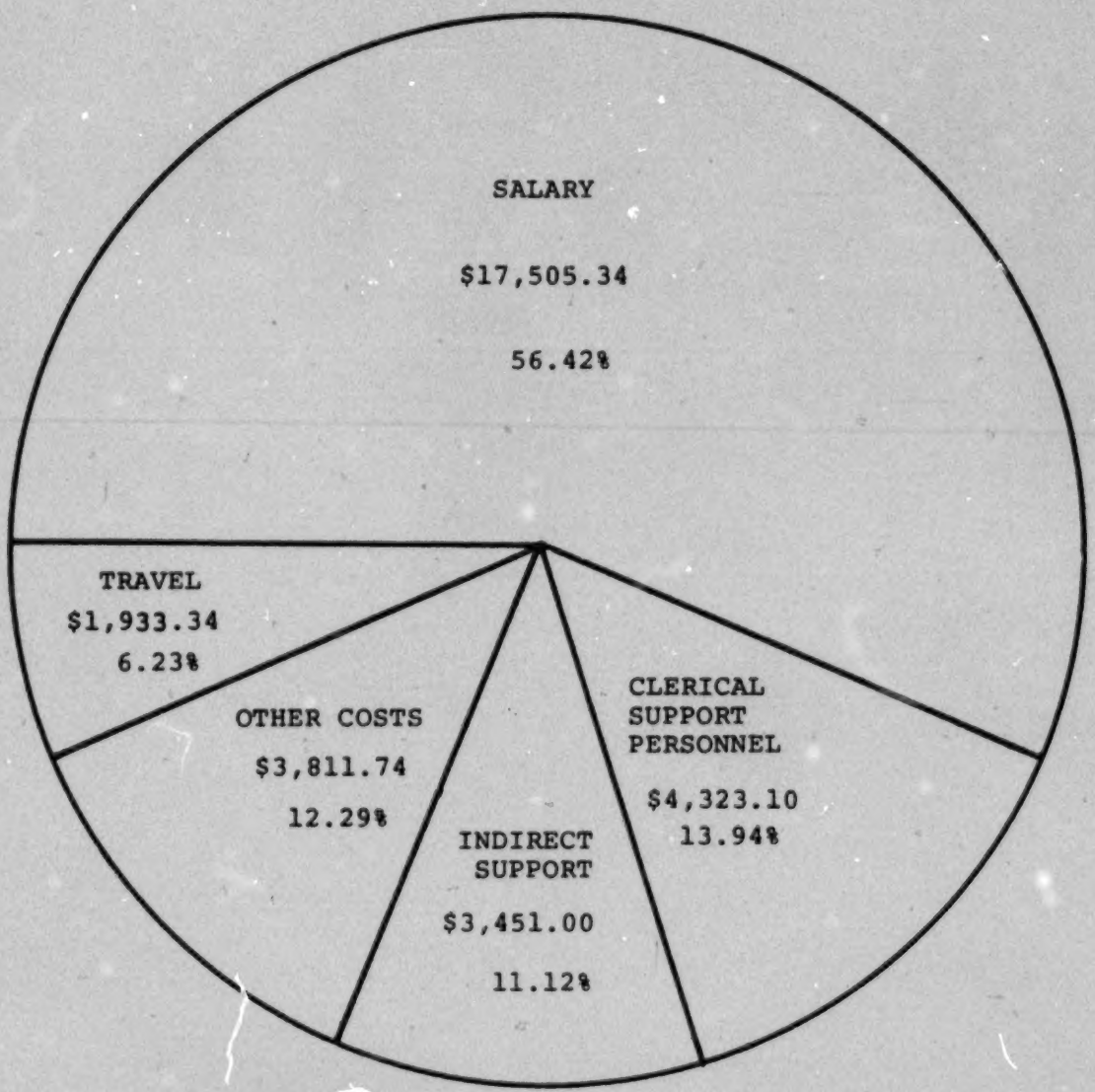
All catalogs under development are controlled by use of a Memorandum of Agreement between the State and the Board of Directors of V-TECS. The project control chart--Appendix "F" (pink paper) --specifies the products and reports to be furnished and the dates they are due. The date on which the Memorandum of Agreement is signed by each state determines the product delivery schedule. The Memorandum of Agreement explains and sets forth other quality control measures used by V-TECS and the member states.

B. Projected Costs of Catalogs Being Developed

Each participating state in V-TECS selects and employs a technical coordinator on a full time basis to serve as the resource

person and quality control supervisor for all catalogs under development in that state. Figure 1 shows the average cost of these persons in the member states, by category, and the total average cost.

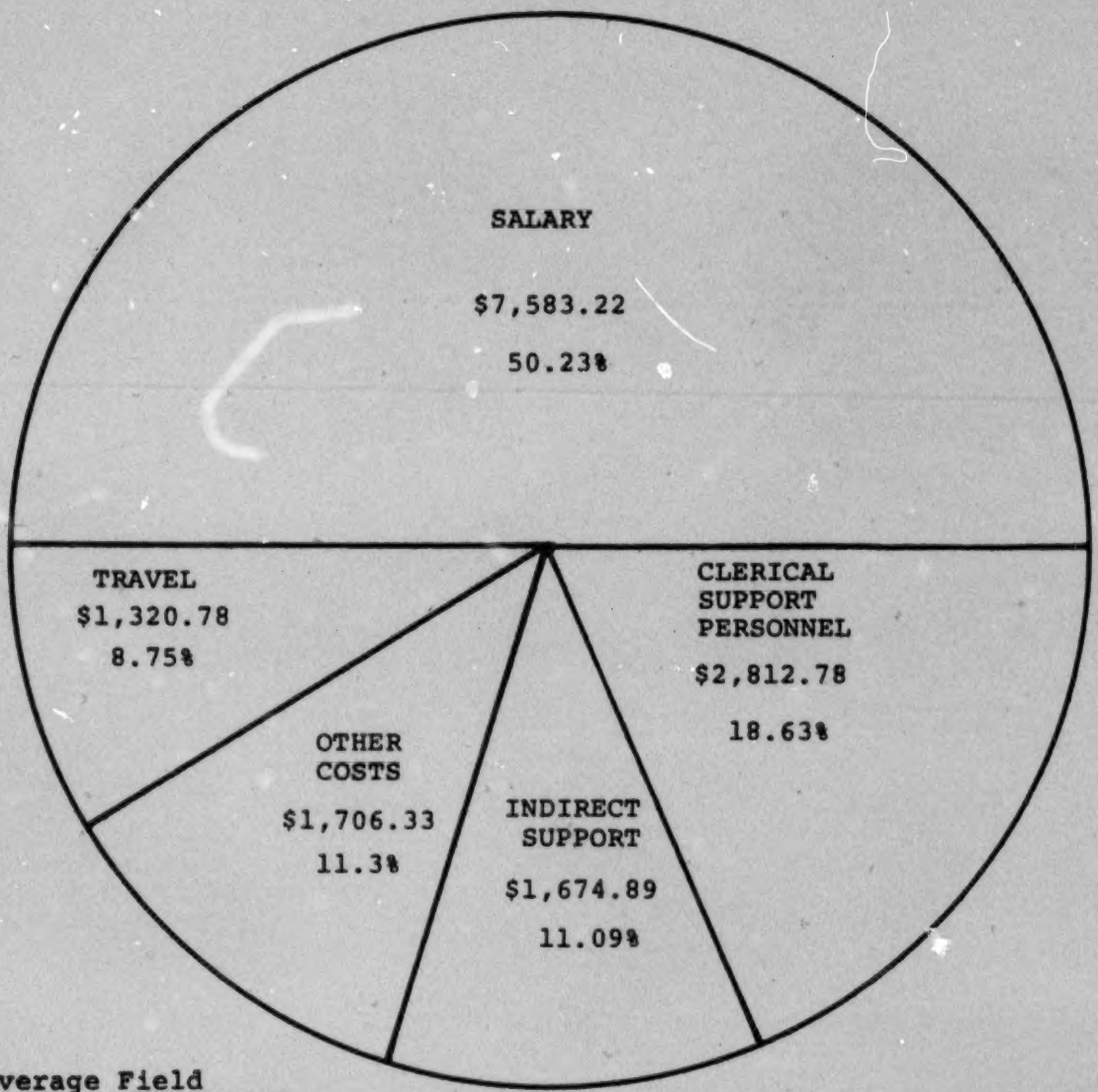
Figure 1 - Projected Costs of Technical Coordinators to Member States (Average Costs Consortium-wide)



Range of Cost: $15,303.00 to $39,308.00
Total Average Cost: $31,024.52

Figure 2 illustrates the average cost of catalogs under development in the member states but does not reflect the cost of the technical coordinator shown in Figure 1. These costs reflect the field work, writing teams, surveys of incumbent workers and other pertinent developmental activities.

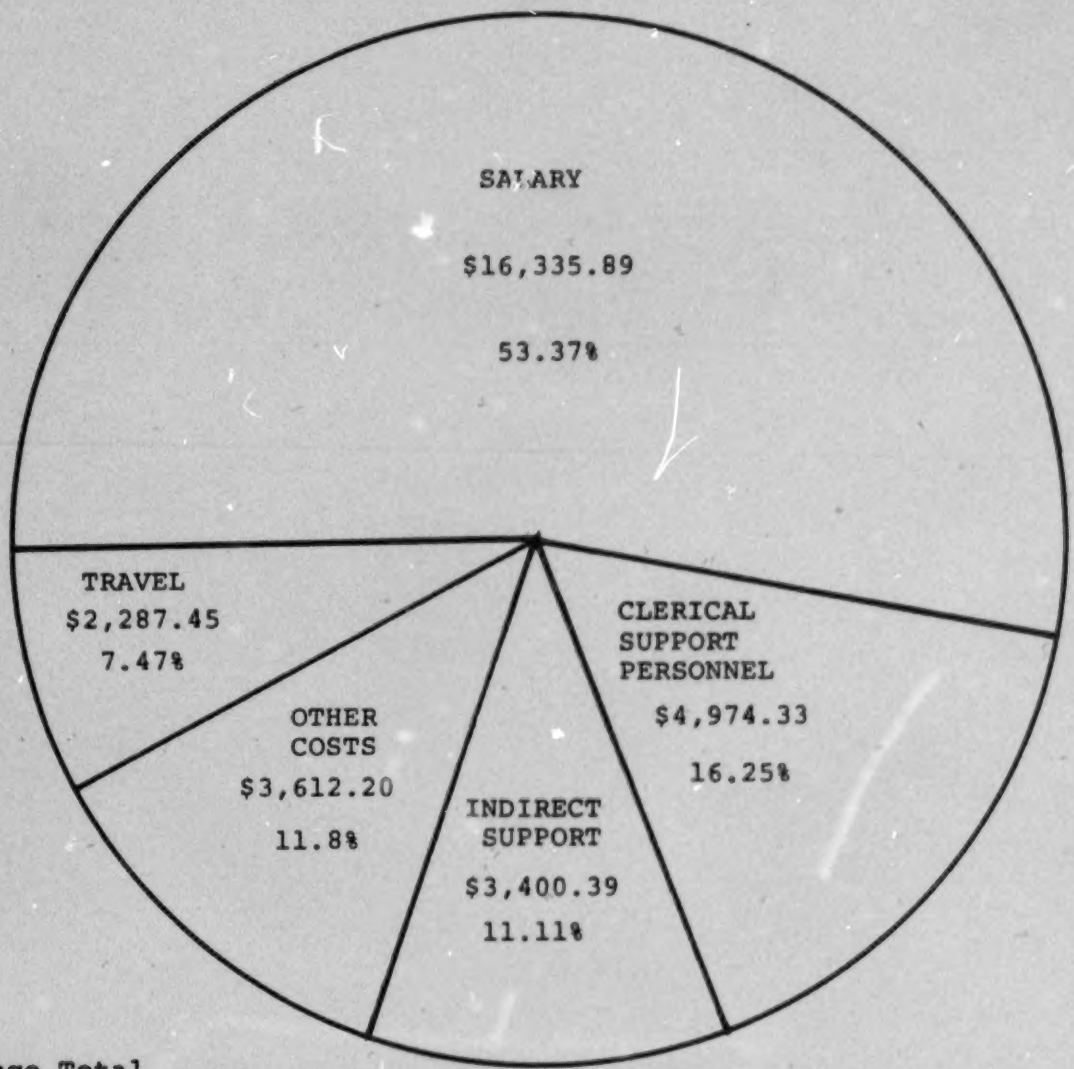
Figure 2 - Projected Field Development Costs for Catalogs (Average Cost Consortium-wide)



Average Field Costs: $15,098.00

Figure 3 illustrates the total average costs of each catalog under development. The costs shown in Figure 1 are divided between the catalog development projects in each state and this division is reflected in Figure 3.

Figure 3 - Projected Total Costs for Each Catalog Under Development Including Costs of Technical Coordinators and Field Development Costs (Average Costs Consortium-wide)



Average Total Costs: $30,610.26

Information is being collected on actual costs of each activity and sub-activity included in the model--Appendix "B" (green paper)

of this report. Time requirements will also be reviewed and studied. After both cost and time figures are calculated, the sequence chart in Appendix "B" (green paper) will be developed into a PERT network. This PERT network will be utilized to improve efficiency of catalog development and for cost/effectiveness study.

V. CONTRACTS AND COOPERATIVE EFFORTS WITH OTHER AGENCIES AND INDIVIDUALS

A. Contracts with Other Agencies and Individuals

During the past seven months several occasions have arisen which have required outside assistance and expertise. The nature of these contracts has been both short term and long term. Following is a brief description of the contracts and names of the agencies and/or individuals used during the seven-month period covered by this report:

(1) Educational Testing Service, Princeton, New Jersey

(a) This organization was contracted by V-TECS to undertake a national State-of-the-Art Study in the area of performance-based instruction. The contract required an overall search of materials already gathered by ETS and additional reviews of the literature, resource files, etc. Those efforts which met a criteria set forth by V-TECS were used to compile and develop the resulting report. This document is being utilized by project personnel in each state.

(b) In addition to the material developed under (a), ETS assisted in the technical development of the sample design used by V-TECS to survey incumbent workers. A staff member of ETS presented

a paper on sampling design and served as a resource to the V-TECS staff.

(2) Nashville State Technical Institute, 120 White Bridge Road, Nashville, Tennessee

This institution has developed computer programs under contract with V-TECS to provide desired reports and statistical analysis resulting from the surveys of incumbent workers by member states. A computer program was operationalized in Nashville State Technical Institute for generating random numbers to be used by states during sampling activities.

(3) Individual Consultive Services

Individual consultive work has been accomplished by:

(a) Dr. Tony Hinson, Director of Planning
Winston/Salem School System
Winston/Salem, North Carolina

This person provided technical assistance for programming the computer to analyze results from the Jury of Experts. The service included advice and assistance on the analysis of the data. A program was written to establish the internal consistency of the response made by the Jury of Experts in the development of the V-TECS model--Appendix "B" (green paper)--of this report.

(b) Mrs. Linda Kemp, Research Librarian
Texas Educational Agency
Austin, Texas

A presentation and workshop activity was developed which was designed to prepare the technical personnel within the states

belonging to V-TECS. The activities prepared the technical personnel to effectively organize and conduct their State-of-the-Art studies. The presentation and subsequent activities were a part of the professional development activities of V-TECS.

(c) Dr. F. Reid Creech, Research Psychologist
Educational Testing Service
Princeton, New Jersey

Dr. Creech assisted V-TECS in the development of its sampling design and other problems connected with the surveying of incumbent workers. He presented papers to the Board of Directors concerning possible sample design and made recommendations for the Board's consideration.

(d) Mr. James R. Marable, Head
Data Processing Technology
Nashville State Technical Institute
Nashville, Tennessee

Mr. Marable has assisted in the conversion of Air Force computer programs used for occupational analysis to programs which are compatible with the 360/30 IBM Computer located in Nashville. He has also assisted and directed the development of a random numbers generator program for use in the surveying of incumbent workers by V-TECS. Other activities will include a conversion to a larger system for handling storage and fast retrieval of data by V-TECS. Mr. Marable is also preparing a computerized PERT system for the activities involved in catalog development. This program will assist V-TECS in identifying high cost and high time-consuming activities, so that they can be studied and improved.

(e) Mr. Elijah Hall, Systems Analyst
Data Processing Technology
Nashville State Technical Institute
Nashville, Tennessee

Mr. Hall provided the technical assistance and direction for the development and implementation of computer programs for V-TECS. All systems analysis work was accomplished and/or directed by Mr. Hall.

(f) Mr. Pat Butler, Administrative Assistant
to the Director
Nashville State Technical Institute
Nashville, Tennessee

Mr. Butler was utilized by V-TECS to assist in the formating of computer printout for occupational analysis, for statistical input and for assistance in the development of the random numbers generating program. Mr. Butler has had intensive experience in occupational analysis with the U. S. Army.

B. Cooperative Efforts with Other Agencies

Several people and agencies interested in the concepts and practicalities of performance-based instruction and with experience in occupational analysis have provided V-TECS with considerable voluntary time during the past few months. Following is a partial list of agencies and people who have contributed so freely of their time and expertise. The list does not include everyone but does include the primary contributors:

(1) Southern Association of Colleges and Schools (SACS)

Dr. Felix Robb, Mr. Ross Tucker, and Mrs. Katherine Byrd have been particularly helpful during the initial phases of development

of V-TECS. Advice and counsel concerning budgets, space, leaders in the educational field and public relations have been notable contributors of this group of people and the Southern Association as a whole.

(2) Commission on Occupational Education Institutions (COEI)

Dr. Bob Childers, Executive Secretary, and the Executive Committee of COEI have been quite helpful in offering advice, counsel and primary administration to the Consortium. The Commission has allowed V-TECS to use its reputation as a leader in the affairs of Occupational Education to further and supplement the efforts of V-TECS. This service and assistance was invaluable. The Research Committee of COEI supported, endorsed, and advised the staff of V-TECS concerning efforts to be undertaken.

(3) The Community College of the Air Force (CCAF), Randolph Air Force Base, Texas

This institution has provided unlimited assistance to all V-TECS efforts. Support by the President of CCAF, Col. John Phipps and the Liaison Division have been particularly helpful in managing the overall Air Force effort and have provided personnel who have both the experience and desire to assist V-TECS in its efforts. The CCAF efforts have included arranging for a broadly-based Instructional Systems Design Conference attended by more than 150 leading educators, and participation in V-TECS Board Meetings. These efforts have oriented the Board to some of the methodology used by the Air Force. CCAF has also provided assistance in the

professional development and training of V-TECS technical personnel in the member states and the V-TECS staff; and last but not least, CCAF is an associate non-voting member of the V-TECS Board of Directors.

(4) Occupational Career Development Branch, Occupational Measurement Squadron, Lackland Air Force Base, Texas

Lt. Col. Lyle Kaape, Squadron Commander, Dr. Walter Driskill, and members of the staff have assisted significantly in the technical preparation of personnel in the member states and the V-TECS staff. This assistance continues to be utilized and has been the basis for initial planning and development of the occupational analysis system adopted by V-TECS. Dr. Driskill and his staff have provided extensive assistance in V-TECS research, development, production of task statements, background information, and task booklet utilization.

(5) Occupational and Career Development Branch, Personnel Research Division, Air Force Human Resources Laboratory, Lackland Air Force Base, Texas

Dr. Raymond Christal and Dr. Wayne Archer have provided technical assistance concerning the research aspects of the occupational analysis system used by the Air Force. In addition, they have been instrumental in assisting personnel from V-TECS and from the Nashville State Technical Institute to adapt the computer programs for the use of member states.

VI. PERSONNEL WORKING ON CATALOGS IN MEMBER STATES

Alabama

Technical Coordinator - Mr. James Kendrick
Project Director - Mr. Chris Bond

Florida

Technical Coordinator - Dr. Margaret Ferqueron
Project Directors - Dr. Glen Morrill
Mr. Roger Richardson

Georgia

Technical Coordinator - Mrs. Bettye Hirst
Project Directors - (Not selected at this time)

Kentucky

Technical Coordinator - Mr. Robert Spillman
Co-Directors - Mrs. Joyce Trelkeld and Mrs. Sarah Henry
Mrs. Joy Hill and Mrs. Julie Cave
Mr. Bruce Carpenter and Mr. James Maddox
Mrs. Martha Keeton and Mr. Lee Cantrell
Mr. John Thomas and Mr. Eugene Smotherman
Mr. Merle Insko and Mr. Gary Scott

Mississippi

Technical Coordinator - Dr. Kent Brooks
Project Directors - (Not selected at this time--basic research and development being conducted by technical coordinator)

Texas

Technical Coordinator - Mrs. Julie Langenfeld
Project Director - Mr. William H. Fitz

Virginia

Technical Coordinator - Dr. J. Dale Oliver
Project Director - Dr. Richard K. Hill

APPENDIX "A"

Bylaws

of the

Vocational-Technical Education Consortium of States

BY-LAWS
of
The Vocational-Technical Education Consortium of States For the Development of Catalogs of Performance Objectives and Criterion-Referenced Measures in Occupational Education

ARTICLE I-NAME

The name of this organization shall be the Vocational-Technical Education Consortium of States (V-TECS).

ARTICLE II-PURPOSES AND OBJECTIVES

The purpose and objectives of V-TECS shall be to:

a. Secure participation of Divisions, Departments or Bureaus of Vocational-Technical Education in State Educational Agencies (or their appointed Representatives) in cooperative efforts for the purpose of producing and exchanging catalogs of performance objectives and criterion-referenced exercises in occupational education;

b. Develop, implement, and evaluate standard performance criteria to be utilized in the production of catalogs by each participating state to assure quality control and transportability of materials;

c. Develop, implement, and evaluate a system for periodically updating and revising catalogs developed by member states;

d. Secure additional technical or financial assistance from business and industry, other interested State or Federal Agencies and educational foundations; and

e. Promote the concept of performance-based education as a means of improving curricula and providing for increased accountability in occupational education.

ARTICLE III-MEMBERSHIP

Section 1. Membership in V-TECS shall consist of active membership and associate membership.

Section 2. "Active Membership" - Any State Educational Agency (or its appointed Representative) desirous of participating in the organization (participation being defined as submission of a letter of intent to, or a contract or grant for the member's proportional share of administrative costs including a commitment to develop or refine agreed upon catalogs) is entitled to become an active member of the organization.

Section 3. "Associate Membership" - Any State, Federal or Non-Profit Private Agency desirous of participating in the organization (participation being defined as (1) a contract or grant for the member's proportional share of administrative costs, or (2) "in-kind" services consisting of the assignment of personnel, products and systems under development) is entitled to become an associate member of the

organization, pending approval by a majority vote of the Board of Directors.

ARTICLE IV-BOARD OF DIRECTORS

Section 1. Number of directors. The business, property and affairs of V-TECS shall be managed by a Board of Directors consisting of one person from each state designated an "active member". Each "associate member" of the organization will be encouraged to appoint one person to serve as a member (ex officio) of the Board of Directors. Directors representing "active members" will have voting privileges while Directors from "associate members" will not have voting privileges.

Section 2. Membership on Board of Directors. Each person serving on the Board of Directors from a state designated as an "active member" shall be the person identified by the State Director of Vocational Education in the State Plan for Vocational Education. The State Director of Vocational Education shall also identify a person to serve as an alternate member of the Board of Directors.

Section 3. Qualifications of Directors. Each person serving on the Board of Directors should have experience in curriculum development, evaluation methodology or related research in Occupational Education.

Section 4. Power to make Bylaws. The Board of Directors shall have power to make and alter any Bylaw or Bylaws, provided, that the Board shall not make or alter any Bylaw or Bylaws, fixing the qualifications, classification or term of office of any member or members of the then existing Board.

ARTICLE V-ADMINISTERING AGENCY

Section 1. Administering agency. An administering agency shall be retained by the Board of Directors of V-TECS provide technical assistance and coordination of activities for the member states. The agency selected shall have regional or national visibility and the capability of developing broad-based contacts and alliances necessary to the attainment of the organization's objectives.

Section 2. Financial support of the administering agency. Each state participating as an active member of the organization shall assume a proportional share of the operational expenses of the administering agency. These expenses, which will be renegotiated annually, shall be payable between July 1 and September 30 of the appropriate fiscal year.

Section 3. Employment of staff. The Administering Agency with approval of the Board of Directors will employ staff as required to fulfill the Consortium level responsibilities. An Executive Director shall be employed to supervise this staff and to work directly with the Board of Directors in operating the Consortium.

Section 4. Fiscal accounting by administering agency. An annual accounting of all monetary receipts and disbursements shall be made by the administering agency. This audit shall be made by a certified public accounting firm selected by the administering agency and, upon receipt, shall be submitted to the Board of Directors for review and reaction.

ARTICLE VI-OFFICERS

Section 1. Chairman. The Chairman shall be selected by and from the voting membership of the Board of Directors. He shall preside over all meetings of the Board and shall see that all recommendations and resolutions of the Board are carried into effect. In addition, he shall be an ex officio member of all standing committees.

Section 2. Vice Chairman. A Vice Chairman shall be chosen from the voting membership of the Board. The Vice Chairman shall perform the duties and exercise the powers of the Chairman during the absence or disability of the Chairman.

ARTICLE VII-MEETINGS OF THE BOARD OF DIRECTORS

Section 1. Frequency of meetings. Meetings of the Board of Directors of V-TECS will be held quarterly. More frequent meetings may be called by the Board Chairman or by a majority of the voting members of the Board.

Section 2. Notification of meetings. All members of the Board of Directors shall be notified in writing at least twenty days prior to the meeting. It shall be the responsibility of the Executive Director of the Administering Agency to inform the Directors of the scheduled meeting.

Section 3. Attendance at meetings. All members of the Board of Directors shall be expected to attend regular and special meetings. In the event a member of the Board is unable to attend a meeting, a designated alternate from the member state will be permitted to attend and participate in all business. The names of designated alternates will be submitted to the Chairman of the Board and the Executive Director of the Administering Agency at the first regularly scheduled meeting of the Board. Any change in the person identified as designated alternate shall be reported in writing to the Chairman of the Board of Directors and the Executive Director of the Administering Agency.

Section 4. Number of votes to which each Director is entitled. At all meetings of the Board of Directors, each voting Director shall have one vote.

Section 5. Quorum at Director's meeting. A majority of voting Board of Directors or designated alternates shall be necessary to constitute a quorum for transaction of business.

Section 6. Majority vote. The act of the majority of Directors present at a meeting at which a quorum is present shall be the act of the Board of Directors.

Section 7. Meeting place. The normal meeting place shall be Atlanta, Georgia.

ARTICLE VIII-STANDING COMMITTEES

The Chairman of the Board of Directors shall appoint such standing committees and ad hoc committees as he and the Board of Directors deem necessary.

ARTICLE IX-FISCAL YEAR

The fiscal year of the organization shall be from July 1 to the following June 30, unless otherwise provided by the Board of Directors.

ARTICLE X-AMENDMENTS TO BYLAWS

Amendment without prior notice. These Bylaws may be amended without prior notice by a vote of two-thirds of the members of the Board of Directors at any regular meeting at which there is a quorum present.

APPENDIX "B"

Developmental Management Model for the

Vocational-Technical Education Consortium of States

APPENDIX "B"

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
Commission on Occupational Education Institutions
Vocational-Technical Education Consortium of States

PHASE I MODEL FOR USE BY THE VOCATIONAL-TECHNICAL EDUCATION CONSORTIUM OF STATES TO MANAGE THE DEVELOPMENT, PRODUCTION, DISSEMINATION, AND IMPLEMENTATION OF CATALOGS OF PERFORMANCE OBJECTIVES AND CRITERION-REFERENCED MEASURES IN OCCUPATIONAL EDUCATION

A Research Project
Conducted by
Ben A. Hirst, Jr.
September, 1973

GLOSSARY OF TERMS

1. Catalog - A collection of performance objectives and companion criterion-referenced test items organized by domain area and further broken down by job titles within the domain.

2. Criterion-Referenced Test Exercise - A criterion-referenced test exercise is an exercise based upon a performance objective and is designed to allow the determination of whether or not the learner has accomplished the objective. It possesses each of the characteristics specified below:

   a. Congruence - The task specified in the item corresponds directly to the performance specified in the objective, including the situation, action, object, and limits.

   b. Comprehensibility - The item-specified task is so stated or portrayed that the learner clearly understands what is expected of him.

   c. Objectivity - The exercise (including component items, if any) is stated in such a way that all competent observers (evaluators) can make a clear and equivocal decision as to whether or not the learner has demonstrated an acceptable performance.

   d. Integrity - The exercise is structured in such a way that an acceptable response to the exercise constitutes sufficient evidence, in and of itself, that the learner has accomplished the corresponding objective.

   e. Equivalence - If two or more exercises correspond to a single objective, each exercise in the set would be a true alternate, in that a student who passes (or fails) one exercise on a given occasion would be expected to pass (or fail) any other exercise in the set.

3. Domain - A group of job titles which are closely related according to Vocational Education and Occupations, U. S. Department of Health, Education, and Welfare and U. S. Department of Labor, U. S. Government Printing Office, 1969.

4. Domain of Interest - The total content covered by a subject or occupation. Domain charts, as they become a part of a task analysis, provide the limits within which the performance objectives and criterion-referenced test exercises are developed.

5. Incumbent Worker - A person who participates in the survey of workers in business and industry, who holds a specific job at that particular time.

6. Instructional System - An integrated combination of resources (students, instructors, materials, equipment, and facilities), techniques, and procedures performing efficiently the functions required to achieve specified learning objectives.

7. Instructional System Development - A deliberate and orderly process for planning and developing instructional programs which insure that personnel are taught the knowledges, skills, and attitudes essential for successful job performance. This process is also known as Instructional System Engineering and Systems Approach to Training.

8. Job - The composite of duties and tasks actually performed by an individual.

9. Job Inventory - A listing of all tasks to be performed. A composite listing of job performance requirements and standards.

10. Job Performance Requirement or Standard - The tasks required of the human component of a system, including the associated standard of performance.

11. Occupational Analysis - The process of identifying duties and tasks which comprise workers' responsibilities, including the collection, collation, and analysis of such data.

12. Performance Objective - A performance objective is a statement in precise, measurable terms of a particular behavior to be exhibited by the learner under specified conditions. It possesses each of the elements or characteristics specified below:

    a. Situation - The situation confronting the learner is clearly specified, including the mode in which stimuli are to be presented.

    b. Action - The action required of the learner is unambigously defined, including the mode in which responses are to be made.

    c. Object - The object on which the learner is to operate (i.e., the object of the action) is clearly stated.

    d. Limits - The particular limits associated with the activity expected of the learner are specified. (Limits may be placed on situation, action and/or object.)

    e. Measurability - The specified action is an observable rather than an inferred response.

    f. Communicability - The objective is so stated that one, and only one, interpretation of the objective is reasonably possible.

g. Criterion - The degree of proficiency required as evidence of accomplishment by a student of the objective is indicated. (The criterion may be indicated implicitly or explicitly. If implicit, 100 percent accuracy is effectively designated. If explicity, it may be appended parenthetically to the statement of the objective.)

13. Duty - A distinct grouping of tasks which are related to each other by the nature of the work to be performed.

14. Task - A unit of work activity or operation that constitutes a logical and necessary step in the performance of a duty.

15. Task Analysis - The process of analyzing job inventory data so as to determine training requirements.

PHASE I MODEL FOR USE BY THE VOCATIONAL-TECHNICAL EDUCATION CONSORTIUM OF STATES TO MANAGE THE DEVELOPMENT, PRODUCTION, DISSEMINATION, AND IMPLEMENTATION OF CATALOGS OF PERFORMANCE OBJECTIVES AND CRITERION-REFERENCED MEASURES IN OCCUPATIONAL EDUCATION

INTRODUCTION

The following model is the result of a study of seven other models: those used by the Air Force Training Command, the State of Florida, the State of Michigan, the State of Alabama, Project CAREER within the State of Massachusetts, the Educational Testing Service, and the State of Utah. Components of the model were selected by the application of criteria taken from the Agreement Form of the Vocational-Technical Education Consortium of States (V-TECS), the minutes of the ad hoc Steering Committee which formed the Consortium, and the minutes of the Board of Directors, V-TECS. Some model components were the result of additional research conducted through an exhaustive study of the literature, a computer-assisted search of the ERIC files, a computer search of journal articles, and a manual search of the Dissertation International Index.

THE PHASE I MODEL

Activity Number I
Determination of Priorities and Assignment of Catalogs

This activity is the first step for developing catalogs of performance objectives and criterion-referenced measures. The activity has four basic sub-activities which form the rationale and consensus for catalog priority identification and assignment to the member states of V-TECS.

Sub-Activity I-1--State Priority Determination

The member states study data available to them concerning manpower needs, employment opportunities, and student interest surveys to establish a priority list within the state for catalogs of performance objectives and criterion-referenced measures. A state may consider regional and national data to determine its priorities or any other information which it deems necessary or appropriate.

Sub-Activity I-2--Consortium Priority Determination

The Board of Directors of V-TECS will discuss, in turn, the priorities established by each member state. The purpose of this structured discussion is to develop a priority listing from which the member states may select and be assigned a certain number of catalogs to develop. This sub-activity is to assure that duplication does not occur and that a state has the opportunity to negotiate for specific catalogs in which it has a particular interest or for which considerable work has already been accomplished.

Sub-Activity I-3--Resolution of Conflict and Exchange of Previous Work Related to Catalogs to be Developed

Should states not be able to resolve priority preference conflicts, a drawing of assignments will be conducted by the Board of Directors. In case a state does not get its desired priority area for reasons identified by the Board of Directors, a copy of such accomplished work would be provided to the state assigned the catalog area in dispute. This material will be included as an essential part of the state-of-the-art study to eliminate duplication of effort.

Sub-Activity I-4--Assignment and/or Selection of Catalogs

The Board of Directors makes the decision concerning the final selection and/or assignment of catalogs after state and Consortium priorities have been determined. Two primary considerations are given member states on the selection of a catalog:

(1) the state has a particular interest in a domain area
(2) the state has accomplished or has in progress considerable work in a domain area which would benefit the Consortium

Catalogs assigned by the Board of Directors of the Consortium are subject to acceptance by the state involved in the assignment.

Activity Number II
The Memorandum of Agreement

A Memorandum of Agreement is entered between the state selecting or being assigned a catalog to develop and the Consortium. The parties of the Memorandum of Agreement are the Chairman of the Board of Directors of V-TECS, the Executive Director of V-TECS and the person designated by the State's Plan for Vocational Education as the State Director of Vocational Education. This activity has three sub-activities which must be completed prior to the developmental work on a catalog. Sub-activity II-1 identifies the minimum content, and sub-activity II-2 outlines the process of approval of the Memorandum of Agreement, and II-3 is in regard to the Selection of a Project Director.

Sub-Activity II-1--Minimum Contents of the Memorandum of Agreement

The Memorandum of Agreement will be developed by the Consortium staff, and after a period of time, will be standardized. The Memorandum of Agreement will contain the following minimum items:

(1) date and name of catalog domain area including job titles to be surveyed
(2) designated signature blanks
(3) specific delivery dates for:
    (a) domain study and task lists
    (b) task analysis and survey results
    (c) catalog of performance objectives and criterion-referenced measures
    (d) field test period
    (e) final catalog and field test results

(4) responsibilities of a full-time technical coordinator in the state and to the Consortium
(5) Consortium staff involvement in the development of catalogs and the development of in-service training and dissemination plans.

Sub-Activity II-2--Processing the Memorandum of Agreement

The Memorandum of Agreement will take the following course for development and approval:

(1) format developed and prepared by the Consortium staff
(2) Memorandum of Agreement reviewed and signed by the Chairman of the Board of Directors and the Executive Director of V-TECS
(3) Memorandum of Agreement mailed to the states for review and signature by the State Director of Vocational-Technical Education
(4) designated copies distributed and project starts
(5) periodic PERT reports are mailed to states on request

Sub-Activity II-3--Selection of a Project Director

Each state developing a catalog of performance objectives and criterion-referenced measures will select a person to serve as project director. The project director selects and manages writing teams which are composed of selected instructors in the domain being developed. These writing teams are trained by the project director and state technical coordinator to analyze the data resulting from the occupational analysis system, the findings of the state-of-the-art study, and other pertinent information. The project director is responsible for submitting to the state technical coordinator results of studies and analyses of data, catalogs of performance objectives and criterion-referenced measures, and other products required by the Memorandum of Agreement. The project director will meet the same qualifications established by the Board of Directors of V-TECS for the technical coordinator in each state.

Activity Number III
Technical Preparation of V-TECS Staff and State Coordinators

The technical preparation and training of the Consortium staff and the technical coordinators in the states are paramount to maintaining quality control. A program of technical development will begin with an orientation to the model to insure that technical skills and knowledge are sufficiently developed to provide maximum quality control. This activity is divided into six sub-activities which form the basis for staff preparation and training and are as follows:

Sub-Activity III-1--System Orientation

A program designed to insure the performance of Consortium staff and technical coordinators will be administered. The orientation is in performance terms with each person satisfactorily completing the required tasks at a criterion-based performance level. Orientation to the system will not be

considered complete until the performance standards are met by the Consortium staff and the technical coordinators.

Sub-Activity III-2--Determining Decision Criteria

The Board of Directors and the staff of V-TECS will develop the decision criteria to be used in the determination of tasks to be converted to performance objectives for cataloging. The decisions will be based upon cut-off indices of time-spent, difficulty, criticality, and task perishability. Other bases for decision criteria may be developed by the Board of Directors based upon research of the data resulting from the surveys of the incumbent workers and their immediate supervisors.

Sub-Activity III-3--Interpretation of Task Analysis Data

An intensive training plan will guide the preparation of Consortium staff and personnel within the states to effectively utilize the data from the task analysis system. This training will assist personnel in the determination of index measures of tasks which are sufficiently high to use in a catalog. Optimum index rating scores will be developed when experience demonstrates that such a rating is feasible. Any tasks which fall below the desired index rating or combination of indice ratings will be excluded from conversion to performance objectives. Continuous training will be conducted for personnel as the task analysis system develops and the analysis of the research indicates a need for further training.

Sub-Activity III-4--Developing Skills in Writing Performance Objectives

Workshops, seminars, and conferences will focus on the development of skills needed to write performance objectives. Consortium staff and technical coordinators will be expected to demonstrate their ability to take a given set of task statements and data, then develop written performance objectives and criterion-referenced test items.

Sub-Activity III-5--Preparing Criterion-Referenced Test Items

Following the training of the staff and technical coordinators in the skills of writing performance objectives from task analysis data and task statements, intensive efforts will be introduced to develop companion criterion-referenced test item(s) for each performance objective. A task statement will yield one or more performance objectives, and a performance objective will yield one or more criterion-referenced test items. Criterion-referenced test writing experts will serve as consultants for training Consortium staff and state technical coordinators. Personnel will either be sent to the source of technical expertise or the experts will be assembled in conference, seminar, or workshop settings.

Sub-Activity III-6--Monitoring and Quality Control of Personnel, Education, and Training

The Consortium staff and state technical coordinators will develop individual plans of technical preparation for themselves under guidelines developed by the Board of Directors of V-TECS. These plans would serve as a guide to

insure minimum competence levels of personnel of the Consortium staff and within the states. The Executive Director of the Consortium has the ultimate responsibility for monitoring individual training programs of the Consortium staff and state technical coordinators in the states. The Board of Directors will receive at least a biannual status report of the technical preparation activities designed for individual Consortium staff and technical coordinators within the states. Reports of this nature may be requested any time the Board of Directors desires to know the status of the total plan or individual progress of personnel.

Activity Number IV
Domain Study for Catalog Development

The domain study consists of thorough and organized research of what has been developed in performance objectives and criterion-referenced measures which might be appropriate and helpful during the development of a catalog. A domain consists of a broad instructional area (such as automotive mechanics) and should include appropriate job titles (e.g. automotive tune-up mechanic, service station mechanic, service station attendant, front end and brake mechanic, general automotive mechanic). Activity IV consists of at least four sub-activities:

Sub-Activity IV-1--State-of-the-Art Study

This activity increases the probability that Consortium projects will find material which has already been partially or fully developed by others in a domain area. The state-of-the-art study will include the following research activities as a part of the states' development of catalogs:

(1) a search of the ERIC system for germane information
(2) a search of the journal index of ERIC for germane articles
(3) inquiries to the U. S. Office of Education, National Center for Curriculum Development in Occupational Education
(4) selected inquiries to state departments of education for germane material
(5) inquiries to industry and private training institutions
(6) review of the Dissertation Abstract International Index
(7) inquiry to local education agencies identified as working on germane projects

Sub-Activity IV-2--Task List Development

A comprehensive list of tasks performed by the incumbent worker will be developed as a part of the domain study. The task list will be based upon research completed in the state-of-the-art study (sub-activity IV-1) and, in addition, will include the following:

(1) a job structure arranged from the lowest job titles to the highest job title within a domain
(2) a coding system developed by the Consortium and identified in the Dictionary of Occupational Titles will be applied to the job structure

(3) development of a task list using the following sources for obtaining task statements:
   (a) review and observation of technical procedures used by workers
   (b) identification of existing task lists or statements from technical manuals and germane literature
   (c) interviews with incumbent workers and their immediate supervisors
   (d) use of craft committees and selected committees of instructors to identify incumbent worker tasks
   (e) provision of space for a survey of incumbent workers to add task statements not included on the list

Sub-Activity IV-3--Development of Background Information

This part of the domain study will be used in conjunction with the task list to provide data which may be cross-tabulated and studied with the companion task lists. The background information section will include as a minimum:

(1) information about the incumbent worker and/or supervisor
   (a) name and address of incumbent worker
   (b) date survey completed by incumbent worker
   (c) job title or classification
   (d) years and months of experience in career field
   (e) years and months of experience in present job title or classification
   (f) previous vocational-technical training
   (g) private or public school attendance
   (h) highest grade level completed or GED equivalent
(2) information about job satisfaction
(3) information about utilization of talents and prior training
(4) list of equipment and tools used in the jobs of the domain
(5) type of work environment of the incumbent worker
(6) size of business or industry

Sub-Activity IV-4--Reports of the Domain Study

The following reports will be required of the domain study activity: (1) state-of-the-art study: This report includes the methods used to meet the requirements of sub-activity IV-1, (1), (2), and (3) of the model; (2) background information and task list: This report includes a comprehensive section on background data to be completed by all incumbent workers who are surveyed. Following this section will be a comprehensive task listing which each incumbent worker will be asked to verify in his job classification. He will also be given the opportunity to add any task he is performing which is not included. The background information and task lists will be printed, in booklet form, in a standard format set by the Consortium staff and approved by the Board of Directors.

Activity Number V
Development and Implementation of the Domain Sampling Technique for the Task Statement Survey

The purpose of this activity is to obtain a sample of incumbent workers by a domain area and collect certain information from those sampled to be used later in a task analysis. Survey booklets of task statements are developed and printed using a standard format for the background and task statement information. The sampling design would be developed by an independent agency. This activity is divided into three sub-activities dealing with the sample design, sample administration, and processing of the survey results. Alternative procedures are included as a part of sub-activity V-1 and sub-activity V-2.

Sub-Activity V-1--Design of the Sample

(a) Optimum sample design--The optimum sample design consists of administration of the task statement survey to stratified random sampling of incumbent workers holding a job classified within the domain. The base data to be used in determining the sample size will be the occupational information (coded from the Dictionary of Occupational Titles) collected during the 1970 Census of the United States. The body of the information collected will be statistically analyzed with inferences made to the population. (All workers in the United States in a given job classification within a specific domain.)

(b) Alternative sample design #1--The alternative sample design #1 collects information using the same base data as in V-1(a) but limits the sample to the member states of the Consortium and makes no inferences beyond those states surveyed.

(c) Alternative sample design #2--The alternative sample design #2 collects information using the same base data as in V-1(a) but limits the sample to the state which is developing a task survey in a particular domain. A purposive sample could be used by any state desiring to validate task lists within a state not included in the survey.

Sub-Activity V-2--Administration of the Occupational Analysis Survey

(a) Optimum administration--The optimum administration of the survey would be conducted through a central staff in the Consortium office. This would permit control of the follow-up letters, follow-up telephone calls, and general sequence timing of the surveys. Limitations exist in the application of the optimum administration which are proportionate to the activities selected in sub-activity V-1.

(b) Alternative administration--An alternative method of administration would be to have each state which develops the task statement lists also conduct the survey of incumbent workers based upon the selection of the sample design in sub-activity V-1. This method is based upon a thorough development of a sampling administration criteria which will be used in the survey efforts. A sub-sample will be selected and individually interviewed on the work site to compare with the results of the mail-out survey.

Sub-Activity V-3--Processing the Survey Results

The results of the survey will be keypunched or optically scanned and computerized. Various analyses will be made of the data to make decisions about tasks performed by incumbent workers. These survey results will provide the basis for writing performance objectives and criterion-referenced test items. Indices of time-spent, difficulty, criticality, and perishability will provide the basis for strategic decision making. The analysis will be accomplished by using computer programs designed by the U. S. Air Force for this purpose.

Activity Number VI
Occupational Analysis System

The backbone of the Phase I Model is the system used to develop scientific task analysis information based upon a direct survey of incumbent workers. This effort should affect the quality, realism, and scope of the catalogs of performance objectives. The basic source document for the task analysis system is the task statement survey and background information collected from the incumbent worker. Activity Number VI has five basic sub-activities which make up the system of task analysis. These sub-activities have to do with computed indices of task time-spent, task difficulty, task criticality, task perishability, and computer analysis and reporting.

Sub-Activity VI-1--Task Time-Spent Index

The incumbent workers complete the background information and check the tasks they actually perform in the task statement booklet. After checking the task statement, the incumbent worker rates the relative amount of time spent on the task along a seven-point scale. The response on the scale is converted to a time-spent index based on percentages over the total group of task statements checked. The resulting percentage figure is cumulative to 100 percent on all tasks checked. This conversion of information and calculations is accomplished by use of a computer.

Sub-Activity VI-2--Task Criticality Index

The incumbent worker rates a task in terms of its critical performance. The primary interest of this part of the task analysis is to ascertain by use of a seven-point scale the relative critical values of each task. When obtained, the index of criticality can be applied to the development of performance objectives. A thorough review of this critical index will identify the tasks which are most critical in descending order to those which are considered least critical. On the basis of these data, determination can be made regarding the consequences of a poor performance of the critical tasks.

Sub-Activity VI-3--Task Difficulty Index

The same process is used to calculate an index of task difficulty which is used in the determination of the time-spent index. A seven-point scale is again employed to determine the incumbent worker's perception of task difficulty. One additional step is included to determine the task difficulty index. The task statement survey is also administered to the immediate supervisor of the incumbent worker. The responses are then correlated, and the resulting figure becomes the difficulty index.

Sub-Activity VI-4--Task Perishability Index

The same sampling technique and incumbent workers are used to obtain a perishability index. This index is a measure, on a seven-point scale, of the relative perishability of a task statement currently being performed by the incumbent workers participating in the survey. This index will relate to the need for retraining or refresher courses should the worker not perform, on a continuous basis, those tasks which are rated to have high indices of perishability. One implication of this type of index is to provide guidance for development of self-paced instructional packages which have as a basis the tasks which have the higher perishability indices. Retraining and development of materials could be minimized by including objectives for tasks which have high indices of perishability.

Sub-Activity VI-5--Processing of Data and Development of Reports

The information collected from sub-activity VI-1, VI-2, VI-3, and VI-4 will be computerized for statistical analysis. Information will be translated from qualitative data to quantitative data. The quantitative data will produce the index values of time spent, criticality, difficulty, and perishability. Many other statistical analyses can be applied to the data for the purpose of rank ordering, multiple regression analyses, cross tabulation of tasks with elements and sub-elements of the background information, etc. The resulting printouts will be furnished to the state developing the catalog of performance objectives and criterion-referenced measures as a basis for their developmental activities and decision making.

Activity Number VII
Development of Catalogs of Performance Objectives and Criterion-Referenced Measures

The activities prior to Activity VII have emphasized primarily the training and preparation of personnel, the collection and analysis of information, and other preliminary steps necessary to write and catalog performance objectives and criterion-referenced measures. This activity is the application stage of the model. Information from incumbent workers is combined with the knowledge of selected instructors, curriculum specialists, criterion-referenced test designers, and educational researchers to transpose the resulting data into meaningful test items. Activity VII contains four sub-activities designed to accomplish this task which are as follows:

Sub-Activity VII-1--Selection and Preparation of the Writing Teams

(1) Selection of Writing Teams--The project director and technical coordinator screen possible writing team candidates and select those instructional personnel which they determine have the potential and interest to write performance objectives and criterion-referenced measures. The writing team will consist of a minimum of one instructor, one technical writer, one person having demonstrated ability and experience in developing criterion-referenced measures and one person having either local or state supervisory

responsibility over the domain being developed. Each writing team should have a preferred alternate member who has responsibility in curriculum development at the local or state level. Exceptions to the writing team composition will be made upon request by the state developing the catalog. The request will be transmitted to the Board of Directors with appropriate justification for the exceptions. Decisions will rest with the Board of Directors.

(2) Preparation of Writing Teams--The state technical coordinator will have the primary responsibility of assisting the project director in the training of the writing team members. The total design of the model will be explained--the results of the state-of-the-art study, the task analysis system, and the conversion process from task statements to performance objectives. Companion criterion-referenced measures will be prepared for each performance objective incorporating performance standards which are used on the job when these standards are available. Components of the training program developed for the Consortium and state technical coordinators will be used as the basis for training and preparing the writing teams for their tasks.

Sub-Activity VII-2--Writing Performance Objectives

All performance objectives developed by the writing teams will meet the definitions and quality criteria set forth in the Memorandum of Agreement. The components of the performance objective will contain the following requirements: situation confronting the learner, action required of the learner, object on which learner is to operate, limits of performance, measurability of the action, communicability of the objective, and degree of proficiency required of the learner.

Sub-Activity VII-3--Preparing Criterion-Referenced Measures

Each performance objective will have one or more companion criterion-referenced test items to be used by instructional personnel. The test items will be studied to insure that a definite relationship exists between the criterion-referenced item and the standard of performance stated in the performance objective. The definition and components of an acceptable criterion-referenced measure are spelled out in the Memorandum of Agreement and will include: congruence with the performance objective, comprehensibility (expressed at a proper reading level for the level of the training program), objectivity of the test item, integrity expressed in terms of sufficient evidence that the learner can perform the corresponding objective, and equivalence within the test items. The criterion-referenced test items will be developed by the writing teams which develop the performance objectives under the technical direction of the person on the team with test item experience, the director of the project, the technical coordinator in the state, and the technical specialist on the Consortium staff. Particular emphasis would be placed upon explicit information concerning criterion of performance on-the-job and conditions under which performance occurs. Standards would be based upon those used by business and industrial workers.

Sub-Activity VII-4--Developing the Catalog of Performance Objectives and Criterion-Referenced Measures

The performance objectives and criterion-referenced measures will be coded by job classification within the domain being developed. This coding system will be developed by the Consortium and applied to all products of the Consortium. Catalog format and content are outlined in detail and are available through the technical coordinator in each state. All catalogs will be furnished in final draft form (camera ready) for mass production.

Activity Number VIII
Field Testing and Commonality Study

This activity is designed to determine the instructional acceptability of the performance objectives and criterion-referenced measures. The degree of validity will be determined by analysis of teacher and instructor responses to questions during the field test portion of each project. Field test sites and conditions will be selected by the application of a criterion developed by the Board of Directors, Consortium staff, and technical coordinators. Activity VIII consists of four sub-activities as follows:

Sub-Activity VIII-1--Field Testing Design

The field test is designed to control the variables under which the catalogs will be tried by teachers and instructors. Controls are placed upon the selection of the site of field testing, supervisory and administrative support and interest, instructor or teacher interest and ability, type of facilities and equipment, and level of students (junior high schools, secondary, post-secondary, etc.) The primary emphasis is placed upon determining comprehensibility, utility, and appropriateness for instruction as perceived by the teachers and instructors. Constraints which prevent the use of a given performance objective and companion criterion-referenced measures are identified by the instructional personnel.

Sub-Activity VIII-2--Commonality Review

During the field test, several reviews of performance objectives are made by teachers and instructors for the purpose of identifying the common performance objectives across a wide group of occupational education programs. This commonality study identifies those common performance objectives within the catalog which are applicable in several occupational domains. The common core identified is analyzed for implications for curriculum design in general shop, pre-vocational, and comprehensive career education programs.

Sub-Activity VIII-3--Evaluation of Criterion-Referenced Test Items

A jury including an incumbent worker, a criterion-referenced test item writer, an instructor in the catalog domain area, and a supervisor of the incumbent workers represented would be used to make a final review of the criterion-referenced test items. The primary purpose of this activity will be to reach congruence on the behavior being tested and to permit inference of competence should the learner meet the specified performance.

Sub-Activity VIII-4--Determination of Performance Objectives and Criterion-Referenced Measures Which are Applicable to Handicapped Persons

The field test version of the catalog of performance objectives and criterion-referenced test items will be reviewed by a committee of persons to determine their applicability to the training of handicapped persons. The appropriate performance objectives and criterion-referenced test item will be coded for each of the specific types of handicapped persons, i.e., partially sighted, speech defects, hard of hearing, crippled, and mentally retarded, etc. A special review committee for the handicapped will consist of a curriculum developer, an instructor from the catalog domain area and a representative of each of the handicapped groups who has the ability to determine the training limitations of handicapped persons in each group. The work of the committee will be coded and computerized for retrieval for use in planning realistic training programs for the handicapped.

Activity Number IX
Computerize Performance Objectives and Criterion-Referenced Measures

The primary purpose of this activity is to provide immediate response to the states' requests for catalogs. The computer banking of performance objectives and criterion-referenced measures eliminates the time-consuming and costly step of technical editing each time a catalog is revised and updated. Since only those objectives actually changed will be accessed from the computer, the majority remain unchanged and may be retrieved and printed in the same manner each time. Research capabilities, as well as many management possibilities, exist when the computer is used to do time-consuming calculations, compiling, and cataloging of performance objectives and criterion-referenced measures. This activity contains four sub-activities as follows:

Sub-Activity IX-1--Developing Computer Bank of Performance Objectives and Criterion-Referenced Measures

After field testing, the catalogs of performance objectives and criterion-referenced measures are processed and placed in a computer bank for rapid retrieval. The coding system adopted by the Consortium is the key to the retrieval system for the computerized information. The information is arranged so that it may be retrieved by domain area or any coded job within a domain. A member of the Consortium may request the total catalog or any of its sub-parts for use in curriculum design and curriculum building. Information is recorded concerning the perceptions of the teachers and instructors during the field test and commonality review. These perceptions concern the comprehensiveness, utility, and appropriateness of the performance objectives and criterion-referenced measures for instruction. In addition, the perceptions concerning the commonality of performance objectives, across several programs in occupational education, are collected for analysis.

Sub-Activity IX-2--Research Aspects of the Computerized Performance Objectives and Criterion-Referenced Measures

(1) Field Test Data--Information collected during the field test activity is analyzed by the computer. The purpose of this analysis is to identify those performance objectives and criterion-referenced measures which appear to be defective. When the defective objectives and measures have been identified, they are forwarded to the state which developed the catalog with instructions for removing the possible defects.

(2) Commonality Review--The results of the commonality review by teachers and instructors form the basis for the identification of core performance objectives. This common core provides a basis for planning curriculum for pre-vocational, general shop, related subjects, and career education programs. These common performance objectives also provide a framework for prerequisite skills, knowledge, and abilities needed by students to further their preparation for employment at a higher level.

(3) Cross-analysis Research--Computer programs will be utilized which cross-tabulate and cross-analyze data received from teachers and instructors with data collected from the task analysis based upon surveys of incumbent workers and their immediate supervisors. The research implications of these data are unlimited when incorporated into the Revision and Updating Activities of the model.

Sub-Activity IX-3--Management of Performance Objectives and Criterion-Referenced Measures

The application of a code number to each performance objective, which relates it to a specific domain and, within the domain, to a specific job classification, provides an added degree of manageability. The performance objectives will be retrieved from the computer bank by job classification, by total domain, by commonality elements, or other mixes required for planning various training programs. The computer can be used to compile the catalog by printing out performance objectives in any desired structure or sub-structure within a domain. Training programs for a new or expanding industry may be designed and retrieved from the computer and can provide those performance objectives which correlate with the job structure of the new industry. The resulting performance objectives provide a realistic planning base for curriculum which must be tailor-made for the task at hand. Many other curriculum management advantages can be developed upon this computer bank of performance objectives. The curriculum design implications are limited only by financial resources and human ingenuity.

Sub-Activity IX-4--Development of Special Reports for Training the Handicapped Learner

The information collected from the work of the special committee for the handicapped (sub-activity VIII-4) would be computerized and used as a research base for developing, planning, and organizing a training program and activities

for the handicapped learner. The performances specified in the objectives and criterion-referenced measures could be modified to permit handicapped workers to demonstrate their ability in terms of particular job titles. Other valuable research could be accomplished by using the data concerning the abilities of the handicapped and comparing it with background information from the incumbent workers and their immediate supervisors.

Activity Number X
In-Service Education and Dissemination Plans

Each state using the materials of the Consortium will develop a comprehensive model for disseminating the catalogs of performance objectives and criterion-referenced measures. In addition, a comprehensive in-service training program must be developed which is designed to prepare both instructional personnel and supervisory personnel in the techniques of managing performance-based instruction. Performance-based instruction requires a thorough knowledge and new skills for teachers and their managers if it is to achieve the desired results. This activity contains sub-activities which are directed toward the achievement of an acceptable degree of implementation of performance-based instruction in the classrooms, laboratories, and shops of participating states.

Sub-Activity X-1--In-Service for Curriculum Developers

Specific programs will be planned for preparing curriculum developers concerning the use of catalogs for organizing learning activities. These programs are to be planned jointly with Consortium staff and include a comprehensive explanation of the system used to develop catalogs, the skills required for retrieving appropriate performance objectives and criterion-referenced measures, and the management strategies necessary to implement a performance-based curriculum effort in the classroom and laboratory. Strategies will also be included to provide direction in the organization and preparation of learning activities.

Sub-Activity X-2--In-Service Education for Teachers and Supervisors

A requirement of Consortium membership is the development, by each state, of an in-service education program for teachers and managers of teachers who will begin to use the catalogs of performance objectives and criterion-referenced measures. The in-service program should be designed to instruct personnel on the intention of the catalog, how to select performance objectives and criterion-referenced measures, and how to supplement their selection with curriculum materials and student learning activities. Those who supervise, direct, or administer programs and have direct contact with the teacher who will be using the material should be trained in the management aspects of performance-based instruction. The basic requirements of the in-service education plan are developed and/or modified by the Board of Directors of V-TECS.

Sub-Activity X-3--Dissemination of Materials

A dissemination outline to be developed by the Board of Directors of V-TECS should serve as a guide for the states. The specific methods of dissemination are left entirely to the participating states. The Consortium staff will assist the states as needed and will encourage the dissemination plan to be integrated with the in-service education plan when at all possible. This integration should insure proper preparation of the users and managers of the learning process and, at the same time, provide a logical point of dissemination.

Activity Number XI
Revision and Updating of the Catalogs

The rapid rate of change in a technical society mandates a better way of keeping vocational-technical instructional materials up-to-date; but, more importantly, it mandates keeping them relevant to the needs of a modern job structure. This activity is designed to maximize input from instructional personnel, craft advisory committees, and the incumbent worker so that catalogs may be revised on a scientific and as-needed basis. This activity contains four sub-activities which form a cycle for revising and updating the catalogs. The cycle will take approximately three years to complete with a decision to revise and update or not to revise and update at the eighteen-month point in the cycle.

Sub-Activity XI-1--Field Utilization Study

Continuous field study is made regarding [illegible]talogs of performance objectives and criterion-referenced measures. [illegible]urposes of the field study are to: (1) detect the defective perfor[illegible]e objectives and criterion-referenced measures, (2) identify additional performance objectives which may need to be added to the catalog when it is revised, and (3) obtain a wider participation in the developmental activities, particularly in the area of curriculum materials.

The field utilization study has two major components for achieving the purposes:

(1) Teacher and Curriculum Developer Inputs--During the first year of use, the teachers and curriculum developers will be asked to react to questions concerning readability, comprehensibility, specificity, and appropriateness of performance objectives and criterion-referenced measures. This information is added to the body of data already existing on the performance objective as a result of the commonality study and the field test results.

(2) Craft Advisory Committee Inputs--Early in the second year, the craft advisory committees for the programs using the material review each performance objective and respond to questions concerning (a) the utility of the performance objective, (b) the appropriateness for present job requirements, (c) the extent to which the performance objective is accomplished by entry level employees, relatively experienced employees, and experienced employees, and (d) the relative criticality of the performance objective.

Sub-Activity XI-2--Analysis of Data from Field Utilization Study

The information collected from the field utilization study is computerized, and reports are developed to determine the results. Statistical analysis is applied to the data to accomplish the purposes of the field utilization study. Data are compared with the results of sub-activity XI-3, survey of incumbent workers, for the purpose of deciding whether the catalog should be revised and updated or if it is still sufficiently valid for continued use.

Sub-Activity XI-3--Conducting New Task Analysis

The same procedure used in Activity VI, task analysis system, is used at the twenty-fourth month point in the revision and updating cycle. The same task statements are used with the exception that those added by incumbent workers on the initial survey are included for this survey application.

Additional information requested of the incumbent worker is that he add any tasks he is now doing which do not appear on the list and place an asterisk by those task statements which he has begun to perform for the first time during the last twelve months.

Sub-Activity XI-4--Decision Criteria for Revising and Updating Catalogs

The information collected on the new task analysis is computerized and analyzed. The purpose of the analysis is to determine the extent of new tasks identified by incumbent workers which have been accomplished the first time during the immediate past twelve months. A review of the results of the field utilization study (sub-activity XI-1) and the survey of incumbent workers forms the basis for the decision regarding the need for revision and updating of the catalogs or portions of the catalogs. If the data suggests a need for revision, the catalogs are put through the same process as for their initial development.

Activity Number XII
Third Party Evaluation of the Vocational-Technical Education Consortium of States

Evaluation of the Consortium on a biennial basis is considered desirable by the Board of Directors of V-TECS. A third party evaluator will be selected on a low bid basis from a group of competent and qualified evaluators. This type of assessment has important advantages and will serve as a basis for self-renewal. This activity contains three sub-activities which are as follows:

Sub-Activity XII-1--Selection of the Evaluation Team

The Board of Directors of V-TECS will select a qualified low bidder as a third party evaluator from states or organizations outside the membership to evaluate and make recommendations concerning the total organization and its procedures. This evaluation shall occur within the first two years of the operation and every two years thereafter. The Board of Directors selects and employs the evaluators and sets guidelines for their study. These guidelines will be used as a basis for developing a well defined and congruent request for proposals.

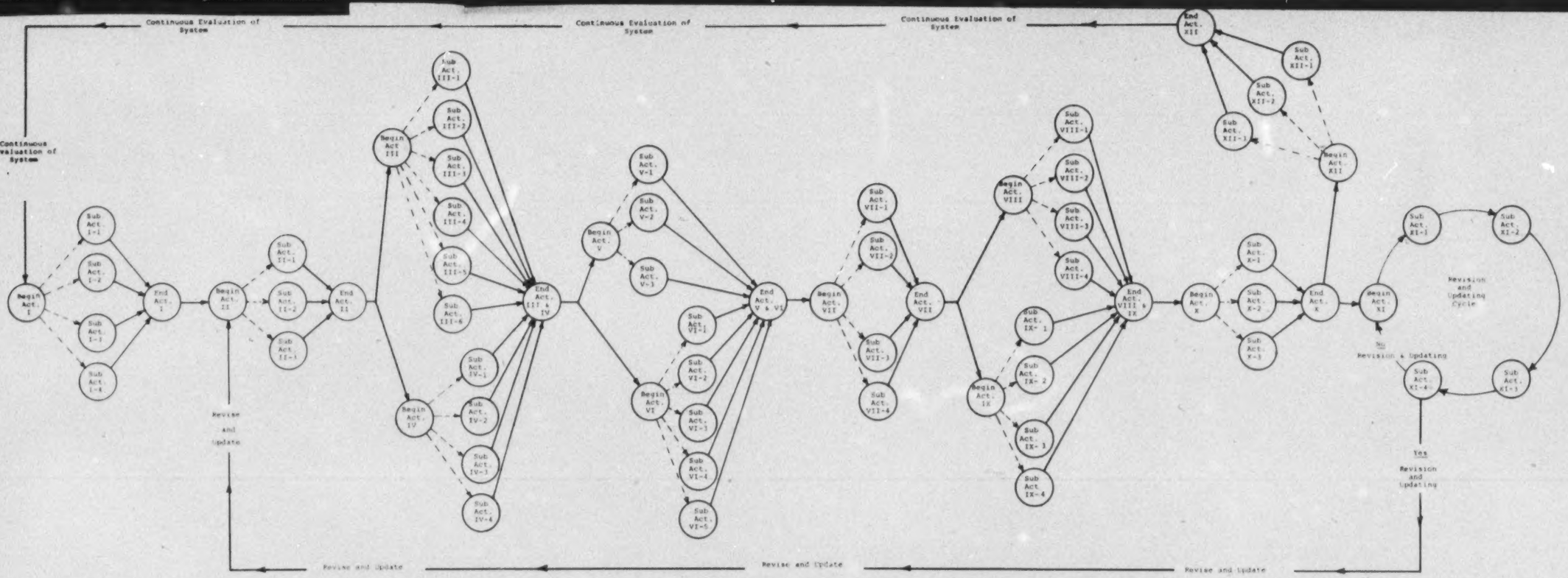
Sub-Activity XII-2--The Evaluation and Report of Results

The evaluation is conducted by a team selected by the Board of Directors. The chairman of the evaluation team will be selected by the successful bidder and the members of the evaluation team. The results of the evaluation are forwarded to the Chairman of the Board of Directors of V-TECS with a copy transmitted concurrently to the Director of the Southern Association of Colleges and Schools, the Executive Secretary of the Commission on Occupational Education Institutions, and the Executive Director of V-TECS.

Sub-Activity XII-3--Implementation of the Recommendations of the Evaluation

The Board of Directors of V-TECS reviews the evaluation results and directs the implementation of the recommended changes as it deems necessary and expedient. The administering agency files its response to the Board of Directors for consideration prior to implementation of recommendations made by the evaluation team.

Master Sequence Chart for the Phase I Model



MASTER SEQUENCE CHART FOR THE PHASE I MODEL

I. DETERMINATION OF PRIORITIES AND ASSIGNMENT OF CATALOGS

- I-1. STATE PRIORITY DETERMINATION
- I-2. CONSORTIUM PRIORITY DETERMINATION
- I-3. RESOLUTION OF CONFLICT AND EXCHANGE OF PREVIOUS WORK RELATED TO CATALOGS TO BE DEVELOPED
- I-4. ASSIGNMENT AND/OR SELECTION OF CATALOGS

II. THE MEMORANDUM OF AGREEMENT

- II-1. MINIMUM CONTENTS OF THE MEMORANDUM OF AGREEMENT
- II-2. PROCESSING THE MEMORANDUM OF AGREEMENT
- II-3. SELECTION OF A PROJECT DIRECTOR

III. TECHNICAL PREPARATION OF V-TECS STAFF AND STATE COORDINATORS

- III-1. SYSTEM ORIENTATION
- III-2. DETERMINING DECISION CRITERIA
- III-3. INTERPRETATION OF TASK ANALYSIS DATA
- III-4. DEVELOPING SKILLS IN WRITING PERFORMANCE OBJECTIVES
- III-5. PREPARING CRITERION-REFERENCED TEST ITEMS
- III-6. MONITORING AND QUALITY CONTROL OF PERSONNEL, EDUCATION, AND TRAINING

IV. DOMAIN STUDY FOR CATALOG DEVELOPMENT

- IV-1. STATE-OF-THE-ART STUDY
- IV-2. TASK LIST DEVELOPMENT
- IV-3. DEVELOPMENT OF BACKGROUND INFORMATION
- IV-4. REPORTS OF THE DOMAIN STUDY

V. DEVELOPMENT AND IMPLEMENTATION OF THE DOMAIN SAMPLING TECHNIQUE FOR THE TASK STATEMENT SURVEY

- V-1. DESIGN OF THE SAMPLE
- V-2. ADMINISTRATION OF THE OCCUPATIONAL ANALYSIS SURVEY
- V-3. PROCESSING THE SURVEY RESULTS

VI. OCCUPATIONAL ANALYSIS SYSTEM

- VI-1. TASK TIME-SPENT INDEX
- VI-2. TASK CRITICALITY INDEX
- VI-3. TASK DIFFICULTY INDEX
- VI-4. TASK PERISHABILITY INDEX
- VI-5. PROCESSING OF DATA AND DEVELOPMENT OF REPORTS

VII. DEVELOPMENT OF CATALOGS OF PERFORMANCE OBJECTIVES AND CRITERION-REFERENCED MEASURES

- VII-1. SELECTION AND PREPARATION OF THE WRITING TEAMS
- VII-2. WRITING PERFORMANCE OBJECTIVES
- VII-3. PREPARING CRITERION-REFERENCED MEASURES
- VII-4. DEVELOPING THE CATALOG OF PERFORMANCE OBJECTIVES AND CRITERION-REFERENCED MEASURES

VIII. FIELD TESTING AND COMMONALITY STUDY

- VIII-1. FIELD TESTING DESIGN
- VIII-2. COMMONALITY REVIEW
- VIII-3. EVALUATION OF CRITERION-REFERENCED TEST ITEMS
- VIII-4. DETERMINATION OF PERFORMANCE OBJECTIVES AND CRITERION-REFERENCED MEASURES WHICH ARE APPLICABLE TO HANDICAPPED PERSONS

IX. COMPUTERIZE PERFORMANCE OBJECTIVES AND CRITERION-REFERENCED MEASURES

- IX-1. DEVELOPING COMPUTER BANK OF PERFORMANCE OBJECTIVES AND CRITERION-REFERENCED MEASURES
- IX-2. RESEARCH ASPECTS OF THE COMPUTERIZED PERFORMANCE OBJECTIVES AND CRITERION-REFERENCED MEASURES
- IX-3. MANAGEMENT OF PERFORMANCE OBJECTIVES AND CRITERION-REFERENCED MEASURES
- IX-4. DEVELOPMENT OF SPECIAL REPORTS FOR TRAINING THE HANDICAPPED LEARNER

X. IN-SERVICE EDUCATION AND DISSEMINATION PLANS

- X-1. IN-SERVICE FOR CURRICULUM DEVELOPERS
- X-2. IN-SERVICE EDUCATION FOR TEACHERS AND SUPERVISOR
- X-3. DISSEMINATION OF MATERIALS

XI. REVISION AND UPDATING OF THE CATALOGS

- XI-1. FIELD UTILIZATION STUDY
- XI-2. ANALYSIS OF DATA FROM FIELD UTILIZATION STUDY
- XI-3. CONDUCTING NEW TASK ANALYSIS
- XI-4. DECISION CRITERIA FOR REVISING AND UPDATING CATALOGS

XII. THIRD PARTY EVALUATION OF THE VOCATIONAL-TECHNICAL EDUCATION CONSORTIUM OF STATES

- XII-1. SELECTION OF THE EVALUATION TEAM
- XII-2. THE EVALUATION AND REPORT OF RESULTS
- XII-3. IMPLEMENTATION OF THE RECOMMENDATIONS OF THE EVALUATION

APPENDIX "C"

Jury of Experts

PHASE 1 MODEL FOR USE
BY THE VOCATIONAL-TECHNICAL EDUCATION
CONSORTIUM OF STATES TO MANAGE THE DEVELOPMENT,
PRODUCTION, DISSEMINATION, AND IMPLEMENTATION OF
CATALOGS OF PERFORMANCE OBJECTIVES AND CRITERION-REFERENCED
MEASURES IN OCCUPATIONAL EDUCATION

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Dr. Raymond Wasdyke, Associate Examiner
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APPENDIX "D"

Instructional System Design Conference Program

Instructional System Design Conference

USAF School of Applied Aerospace Sciences, Keesler
Keesler AFB, Biloxi, Mississippi

OCTOBER 9-12, 1973

Cosponsored by
THE SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS'
COMMISSION ON OCCUPATIONAL EDUCATION INSTITUTIONS
VOCATIONAL TECHNICAL EDUCATION CONSORTIUM OF STATES
AND THE
COMMUNITY COLLEGE OF THE AIR FORCE

ATC Keesler 4-976

CONFERENCE CHAIRMAN: BOB CHILDERS
Executive Secretary, Commission on Occupational Education Institutions
Southern Association of Colleges and Schools

TUESDAY, OCTOBER 9

8:00 a.m. Registration and Coffee Lobby - Ramada Inn

9:00 a.m. Welcome
BRYAN M. SHOTTS, Major General, USAF, Center Commander, Keesler AFB

9:10 a.m. "The Relationship of Performance-Based Objectives to Accountability in Education"
JOHN L. PHIPPS, Colonel, USAF, President, Community College of the Air Force

9:40 a.m. "Performance-Based Objectives: Boon to Education"
FELIX C. ROBB
Director, Southern Association of Colleges and Schools

10:10 a.m. Coffee Break

10:30 a.m. "Why Use Performance-Based Objectives?"
LEON M. LESSINGER
Dean, College of Education
University of South Carolina

11:30 a.m. Lunch

1:00 p.m. Films
"Instructional System Development: The Process"
"Criterion Objectives: Key to Success"

1:45 p.m. "The Air Force Occupational Research Program"
RAYMOND E. CHRISTAL
Personnel Research Division, Lackland AFB

3:15 p.m. Break

3:30 p.m. "Using Information Revealed by the Occupational Analysis"
WALTER E. DRISKILL
Occupational Measurement Squadron, Lackland AFB

6:00 p.m. Social Hour
Conference Participants
Officers' Club - Keesler AFB

WEDNESDAY, OCTOBER 10

9:00 a.m. Seminars
"From Occupational Analysis to Performance-Based Objectives: The Critical Transition"

10:15 a.m. Break

10:30 a.m. Seminars
"How Are Criterion Measures Developed Which Will Evaluate Attainment of the Objectives?"

11:30 a.m. Lunch

1:00 p.m. Presiding:
ROBERT SPILLMAN,
Chairman, Board of Directors, Vocational-Technical Education Consortium of States

"Selection of Materials To Do The Job"

"Consortium Assistance in Procurement of Materials"
BEN A. HIRST, JR.
Project Director, Commission on Occupational Education Institutions

THE SPEAKERS

Raymond E. Christal is Chief, Occupational and Career Development Branch, Personnel Research Division, Air Force Human Resources Laboratory. He designed a complex set of computer programs (CODAP) used for analyzing and reporting occupational information within the Air Force. He has served in a variety of capacities with governmental agencies, including directing construction of Air Force Officer Qualification Tests, developing tests used in selecting the first astronauts, and co-developing application of a mathematical model for grouping elements into mutually exclusive clusters.

Walter E. Driskill is Chief, Occupational Career Development Branch, Occupational Measurement Squadron, Lackland Air Force Base, Texas. He has held various secondary and post-secondary teaching positions in the civilian community. In 1956 he began his civil service career with the Air Force, subsequently serving as an employee relations officer, test and measurement specialist, and most recently as Technical Director of the Air Force occupational analysis program.

Leon M. Lessinger is Dean of the College of Education of the University of South Carolina. He is a licensed clinical psychologist and has been a teacher, administrator, research consultant, and Associate U. S. Commissioner for Elementary and Secondary Education. He serves as President of the Aerospace Education Foundation. Among many publications, he is the author of *Every Kid a Winner* and editor of *Accountability in Education*.

John L. Phipps is President, Community College of the Air Force. A native of Dallas, Texas, Colonel Phipps entered the Air Force in 1951. Early in his career he held various instructor positions ranging from electronics to navigation. While serving as Education and Training Staff Officer at Headquarters USAF he was instrumental in founding the Air Force Human Resources Laboratory and Instructional Technology organizations in the Pentagon. In recent years he has worked as a research psychologist/systems analyst and has

"Materials Available Through Community College of the Air Force"
BILLY J. KOSCHESKI, MSgt, USAF, Curriculum Advisor, Community College of the Air Force

"Materials Available Through the Aerospace Education Foundation"
JAMES H. STRAUBEL
Executive Director, Aerospace Education Foundation

2:15 p.m. Break

3:00 p.m. "Construction of Materials Using the Principles of Instructional System Development"
BLAINE E. LEE, 1st Lt, USAF
Instructional System Staff Officer

RICHARD A. MOON, SMSgt, USAF, Instructional System Monitor

THURSDAY, OCTOBER 11

9:00 a.m. Visits to Training Sites - Keesler AFB

Electronics Principles

Personnel and Administration Principles

Personnel Specialist On-The-Job Training (Computer-Assisted Instruction)

Airborne Radio Communications

11:30 a.m. Lunch

1:00 p.m. Visits to Training Sites - (Cont'd)

FRIDAY, OCTOBER 12

9:00 a.m. "Evaluation of Courses Developed Under the Instructional System Concept"
BILL M. JINKS
Chief, Evaluation Division

DENNIS JORDAN
Training Specialist, Curriculum Control
Keesler AFB

10:00 a.m. Break

10:15 a.m. "Performance-Based Instruction: Implications For The Future"
WILLIAM F. PIERCE
Deputy Commissioner for Occupational and Adult Education
U.S. Office of Education

11:00 a.m. Closing Remarks and Adjournment

served as a consultant to various government agencies.

William F. Pierce is Deputy Commissioner for Occupational and Adult Education, U. S. Office of Education. He brings to this office a rich background in occupational education, having risen through the ranks in the Michigan Department of Education (1964-73) while serving as consultant and as supervisor of manpower and development training programs. He has served as Deputy Superintendent of Public Instruction, Michigan Department of Education. Prior to this (1962-64) he gained experience as a part-time instructor and graduate assistant, College of Education, Michigan State University, subsequently rising to the position of Assistant Coordinator of Student Teachers.

Felix C. Robb is Director of the Southern Association of Colleges and Schools. His career began as a public school teacher later shifting to that of a college instructor. Subsequently, he held a variety of academic administrative posts before being named President of Peabody College. He has initiated for our government a program of educational and technical assistance in the Republic of Korea. His deep interest in international understanding has taken him to Europe and back to the Orient on special missions. A noted author and speaker, Dr. Robb has long been involved in educational, civic, and religious activities. He is a protagonist of the New South and an outspoken proponent of education's responsibility to help maintain and expand freedom.

James H. Straubel is Executive Director of the Air Force Association and the Aerospace Education Foundation. He is publisher of *Air Force Magazine* and editor of *The Official Guide to the Army Air Forces* and *Air Force Diary*. Films he has written and produced include "The Real Revolution in Education." He has created and directed hundreds of seminars dealing with the impact of aerospace technology on modern society, including more than 150 specifically dealing with our educational requirements.

APPENDIX "E"

The Role of the Technical Coordinator in the States

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
795 Peachtree Street, N.E. • Atlanta, Georgia 30308
Phone 875-8011 Area Code 404

VOCATIONAL-TECHNICAL EDUCATION CONSORTIUM OF STATES

The Role of the Technical Coordinator in the State

The technical coordinator in each state belonging to the Consortium has two primary functions which are: (1) to act as a liaison between the state projects and the Consortium staff, and (2) to serve as a technical resource person for project personnel within the state. The technical coordinator has a key role in the success of projects in a particular state. The preparation and training of this person is vital to the proper functioning of the Consortium and, in particular, the activities within the state. Administratively, the technical coordinators are responsible to an administrator in the state but are expected to be responsive to the Consortium staff. For this reason the responsibilities are delineated as follows:

I. Duties and Responsibilities Within the State

Within the state, the technical coordinator provides the services and performs the functions as follows:

(1) Monitors projects which are developing catalogs of performance objectives and criterion-referenced measures in accordance with the Memorandum of Agreement.

(2) Serves as a resource person for project personnel within the state during Domain Study activities.

(3) Reviews all reports and products developed within the state to assure that quality criteria have been met.

(4) Supervises the survey of incumbent workers (follow-up activities only) inside the state to assist in obtaining adequate responses to the task list booklet.

(5) Serves as a resource person for the interpretation of task analysis data to personnel within the state.

(6) Assists in the preparation and training of personnel serving on writing teams to convert task analysis data and task statements to performance objectives.

(7) Provides technical assistance to project directors so that products are delivered on time and meet acceptable quality standards.

(8) Provides technical advice and assistance to personnel in the state during the field test, field utilization studies and implementation phases of the catalogs.

(9) Assists in the development of the state's dissemination plan and in-service training plan for implementing the use of the catalogs of performance objectives and criterion-referenced measures.

II. Responsiveness to the Consortium Staff

The Consortium staff has a technical specialist whose primary responsibility is to work with and assist the technical coordinators in the member states. The working relationship of these people must be rather close so that an acceptable quality level of products, training of personnel, and procedures used to develop catalogs can be maintained. In view of these key items the technical coordinators in each state are expected to be responsive to the Consortium staff as follows:

(1) Participate in all training programs, seminars, and conferences developed and conducted by the Consortium.

(2) Attends other specialized training sessions, courses, conferences, and seminars prescribed by the Board of Directors of the Consortium.

(3) Serves as a technical resource person to projects within the state and makes necessary reports required under provisions of the Memorandum of Agreement.

(4) Reviews all reports and products produced in the state through its project efforts prior to submitting to the Consortium staff.

(5) Provides periodic progress reports of projects to the Consortium staff at intervals set by the Board of Directors of the Consortium.

APPENDIX "F"

Schedule and Sequence Chart

for the

Memorandum of Agreement

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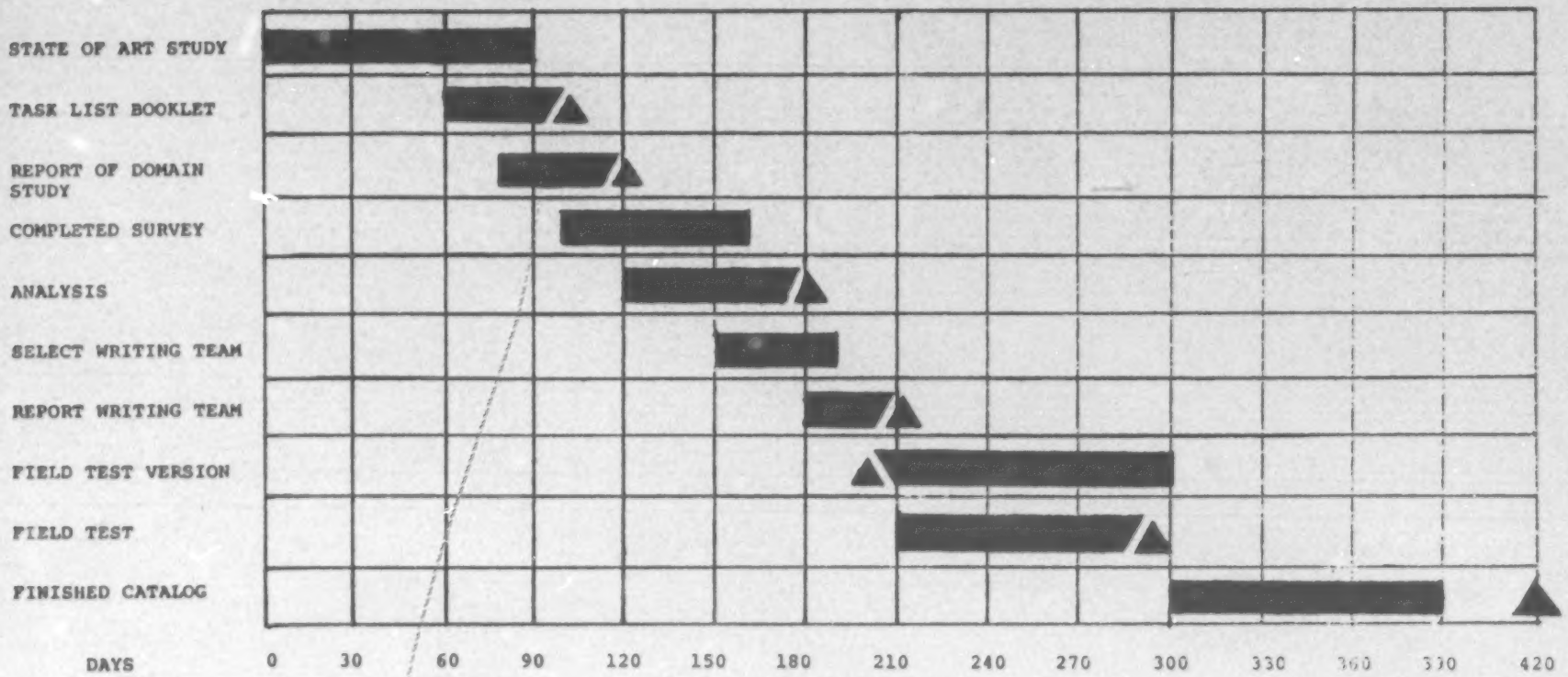
VOCATIONAL-TECHNICAL EDUCATION CONSORTIUM OF STATES

SCHEDULE AND SEQUENCE CHART FOR THE MEMORANDUM OF AGREEMENT



▲- product or report delivery

Appendix "F"